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**BULLETIN OF THE
UNIVERSITY OF NEW HAMPSHIRE**

**GRADUATE STUDY
1924-1925**



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BULLETIN OF THE UNIVERSITY OF NEW HAMPSHIRE

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The Bulletin is published in October, November, December, January, on February 1, February 15, in March, April and May, and includes:

- The Catalog of the University
- The Report of the President
- The Financial Report
- The Catalog of the Summer School
- The Illustrated Booklet

and other publications of the University.

THE UNIVERSITY CALENDAR 1924-1925

FALL TERM 1924

Sept. 10	Wednesday	Registration Day—Freshman class
Sept. 16	Tuesday	Registration Day—Upper classes
Sept. 17	Wednesday	Recitations begin at 8 A.M.
Oct. 8	Wednesday	Annual Meeting of Board of Trustees
Nov. 4	Tuesday	Mid-Term Warnings to be filed, 5 P.M.
Nov. 25	Tuesday	Thanksgiving recess begins at 6 P.M.
Dec. 1	Sunday	Thanksgiving recess ends at 8 P.M.
Dec. 17-23	Wed.-Tues.	Fall Term Examinations
Dec. 23	Tuesday	Fall Term closes at 4 P.M.

WINTER TERM 1925

Jan. 2	Friday	Registration Day
Jan. 3	Saturday	Recitations begin at 8 A.M.
Jan. 14	Wednesday	Meeting of Board of Trustees
Feb. 13	Friday	Mid-Term Warnings to be filed, 5 P.M.
Feb. 22	Sunday	Washington's Birthday
Mar. 10	Tuesday	Town Meeting—classes dismissed at 10 A.M.
Mar. 23-27	Mon.-Fri.	Winter Term Examinations
Mar. 27	Friday	Winter Term closes at 4 P.M.

SPRING TERM 1925

Apr. 7	Tuesday	Registration Day
Apr. 8	Wednesday	Recitations begin at 8 A.M.
Apr. 8	Wednesday	Meeting of Board of Trustees
May 6	Wednesday	New Hampshire Day (Subject to change)
May 15	Friday	Mid-Term Warnings to be filed, 5 P.M.
May 30	Saturday	Memorial Day (Holiday)
June 15-20	Mon.-Sat.	Spring Term Examinations
June 17	Wednesday	Senior Examinations close, 4 P.M.
June 20	Saturday	Alumni Day
June 21	Sunday	Baccalaureate Day
June 22	Monday	Class Day
June 22	Monday	Meeting of Board of Trustees
June 23	Tuesday	Commencement Day

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GRADUATE STUDY AND ADVANCED DEGREES

The administration of graduate work of the University is in charge of the Graduate Committee.

ADMISSION

A graduate who holds a Bachelor's degree or its equivalent from an approved college or university will be admitted to graduate study and may register for such graduate subjects as he may be prepared to take. In general, a student must have not less than twenty-seven undergraduate credits, or the equivalent, in the department in which he wishes to "major." All inquiries concerning admission to graduate study should be directed to the Chairman of the Graduate Committee. Because of the limited number of graduate subjects offered during any one term, prospective students should confer with the head of their major department as early as possible regarding their course of study, and make application for admission previous to the time of registration.

A student lacking one or more undergraduate subjects which may be prerequisite for graduate subjects may register in the undergraduate colleges for these subjects, but he will receive no graduate credit for the same. A college graduate who desires to take no subjects except those carrying only undergraduate credit should register as a special student in the college giving the work.

REGISTRATION

The student desiring to register for graduate study must present his credentials to the Chairman of the Graduate Committee.

In consultation with the "major" professor, the student must fill out the required forms for graduate study.

The student must deposit these blanks with the Chairman of the Graduate Committee. When such cards are approved, the student, after paying his fees at the Business Office, must deposit the cards with the Registrar.

TUITION AND FEES

Tuition is \$75 a year for residents of New Hampshire, and \$150 for non-residents; incidental fees are \$50 a year. One third of the tuition fee is payable in advance on the first of each term.

Incidental fees are payable in advance, \$20 the first term and \$15 for each of the other two terms. A diploma fee of \$5 is charged upon graduation. Charges will be assessed for extraordinary breakage or damage. No laboratory or course fees are charged. Payment of the incidental

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fees entitles the student to admission to all varsity athletic games and contests.

"Members of the regular college staff and their immediate families electing college work shall not be required to pay tuition charges. Scholarships shall be granted to those registering for ten or more credit hours."

"Members of the regular college staff and their immediate families registering for less than ten hours of college work shall be required to pay such part of the general fees as the credit hours elected shall bear to sixteen hours. The payment of such fee, unless it amounts to the total fee, shall not entitle them to athletic tickets."

BOOKS

The students may purchase books, drawing instruments, materials, etc., at the University bookstore in Thompson Hall.

ROOMS

The University has three dormitories for women and four for men. All rooms are heated, lighted and furnished. Bed linen, quilts and towels, however, are provided by the individual student. Each women's dormitory is equipped with a laundry. In many cases three students occupy a suite of rooms. Prices range from \$63 to \$100 a year for each student. Applications for rooms in the dormitories should be addressed to The Registrar, University of New Hampshire, Durham, N. H.

A deposit of five dollars must accompany each application for a room, this deposit to be forfeited if the room accepted is not occupied by the applicant. The deposit is held as a guarantee against breakage, and will be returned upon the payment of any bills for damage at the close of the year, or upon the applicant's withdrawal from the University.

Reservation for rooms will be cancelled ten days before the registration date noted in the current college catalog unless one-third of the annual rent has been paid before that date.

Rooms paid for and not accepted one day after registration will be declared vacant and the room rent returned, unless the individual having the reservation makes a written request to the Registrar to hold the room until a later date. The advance payment of the room will not be returned to those making this special request. No rooms will be reserved more than ten days after the registration date. Early application is necessary in order to secure a choice of rooms. Rooms may be secured in private houses for about the same prices as for those in college dormitories.

Women students, unless living at home, are required to room in the women's dormitories, or in approved houses. A competent matron is in charge of each women's dormitory.

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BOARD

The University operates on a self-service basis a modern, well-appointed Commons. Both regular weekly board and cafeteria service are provided. Exact cost records are kept, and prices are adjusted in such manner as to give students the advantage of changing costs.

UNIVERSITY AIDS TO STUDENTS

Scholarships and Loan Funds.—A limited number of scholarships are awarded annually for the purpose of aiding deserving students. Recently, owing to the large increase in student attendance, all scholarships thus far provided have been utilized. However, the trustees are anxious to supply scholarships to as many as possible of the really needy young men and women in New Hampshire. In order to do this most equitably, they require full information of all applicants relative to the necessity for scholarship aid. Scholarship application blanks will be provided, upon request, by the Dean of the Faculty.

These scholarships will be forfeited by the student at any time for misconduct.

In general, scholarships granted to graduate students will be treated as loans on interest after graduation.

GRADUATE ASSISTANTSHIPS

Graduate assistantships which usually require half-time service are available in a number of the departments. Inquiries regarding these assistantships should be addressed to the head of the department concerned.

GRADUATE WORK IN THE SUMMER SESSION

Graduate work done in the summer session of the University may be credited towards an advanced degree. The residence requirement for the Master's degree may be completed in not less than four summer sessions. Graduate work in fields of special interest to high school teachers and superintendents is offered in the summer session, and may be found listed in the bulletin of the summer school.

Students taking graduate work in the summer session must register with the Chairman of the Graduate Committee.

ADVANCED DEGREES

Two types of advanced degrees are conferred: (a) Master of Science and Master of Arts, given only in course, and (b) the professional degrees, Mechanical Engineer and Electrical Engineer, conferred only upon graduates of this institution, and based upon the quality of their professional work and the presentation of a satisfactory thesis.

Granting of the professional degrees referred to under (b) is tempora-

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rily suspended pending the standardization of requirements for these degrees.

REQUIREMENTS FOR THE MASTER'S DEGREE

Residence.—A minimum of one full academic year or four summer sessions in residence is required. If a graduate student is serving as a member of the instructional staff or of the experiment station staff, the Master's degree cannot be earned in less than two years, of which at least one year or four summer sessions must be in residence, and then only upon completion of the other requirements for the degree.

Credits.—A minimum of 45 credit hours is required, of which not less than 25 or more than 30 shall be devoted to a "major" and a thesis, and not less than 9 or more than 15 to a "minor." Work in allied departments may be accepted as part of the major requirements if such work is properly correlated with the major subject. Not over 15 credits may be given for a thesis, and at least 15 credit hours must represent work regularly scheduled in classes. Of the total credit hours, not more than half will be accepted from another institution.

Selection of Thesis Subject.—Before the close of the first term in residence, the candidate must file with the Graduate Committee for their approval a statement of the thesis subject as approved by the head of the major department.

Approval of Candidacy.—At least three months previous to the time of granting the degree, an application for admittance to candidacy for the degree, properly approved by the head of the major and minor departments, must be submitted to the Graduate Committee for their approval.

Examinations.—All candidates must meet the regular requirements as to examinations in the subjects for which they are registered. Before a candidate may be recommended for the Master's degree, he must pass an oral examination before a special committee designated by the Graduate Committee and including the heads of the departments in which the "major" and "minors" have been taken. At least four weeks previous to the date at which the degree is sought, an application for examination approved by the head of the major and minor departments must be filed with the Graduate Committee.

Thesis.—The thesis must be typewritten upon standard paper, eight and one-half by eleven inches, medium weight, neatly bound in black cloth, and gilt-lettered on the first cover with title, name of author, degree sought, and year of graduation. The title page should bear the following statement:

"A thesis submitted to the University of New Hampshire in partial

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fulfillment of the requirements for the degree of Master of Arts (Master of Science)."

Whenever a thesis is printed in any periodical, it must be designated as having been accepted as a Master's thesis by the University of New Hampshire.

Two bound copies must be filed before Commencement Day, one with the Librarian and one with the head of the department in which the major work is done.

TABULAR SUMMARY OF REQUIREMENTS FOR THE MASTER'S DEGREE

<i>Work</i>	<i>Under Direction of</i>	<i>Date</i>
Course of study	Heads of major and minor departments and Graduate Committee	On entrance
Approval of thesis subject	Head of major department and Graduate Committee	Before close of first term
Approval of candidacy	Heads of major and minor departments and Graduate Committee	Three months previous to date on which degree is sought
Application for final examination	Heads of major and minor departments and Graduate Committee	Four weeks previous to date on which degree is sought
Fee for binding thesis	Business Office	One week before Commencement

DESCRIPTION OF SUBJECTS

(Alphabetically arranged)

No subject will be accepted for graduate credit that is not designated by the letter "G" on the Registrar's records.

Credits for the thesis shall be recorded in the registrar's office as "Thesis Credits."

Graduate credit may be given for subjects not listed in the catalog if recommended by the major and minor departments concerned, and approved by the Graduate Committee.

A graduate student taking a subject for graduate credit which is not primarily for graduates may be required to do additional work above that required of undergraduate students.

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Prerequisites for the subjects that are described in the catalog are stated with reference to subject numbers of the general catalog of the University.

AGRICULTURAL CHEMISTRY

HENRY R. KRAYBILL, *Professor*

In order to "major" in this department, students must have credit in General Chemistry, Qualitative Analysis, Organic Chemistry, Quantitative Analysis, Physical Chemistry and the biological sciences.

It is desirable that candidates for the Master's degree have a reading knowledge of German or French.

4-b. **Physiological Chemistry.** 3 credits.

5-c. **Physiological Chemistry.** 3 credits.

6-a. **Plant Chemistry.** 4 credits.

7-a, 8-b, 9-c. **Agricultural Analysis.** 4 credits each.

19-c. **Dairy Chemistry.** 3 credits.

For description and prerequisites for the preceding subjects, see general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

10-a, 11-b, 12-c. **Advanced Biochemistry.**

One of the following subjects may be given each term, depending upon the wishes of the majority of the students electing these subjects: (1) Physico-chemical methods applied to Biology; (2) Enzymes; (3) Proteins; (4) Carbohydrates; (5) Biochemical preparations. Credit to be arranged.

16-a, 17-b, 18-c. **Seminar.** 1 credit each.

AGRONOMY DEPARTMENT

FREDERICK W. TAYLOR, *Professor*

M. GALE EASTMAN, *Assistant Professor*

9-b. **Agricultural Statistics.** 2 credits.

10-c. **Types of Farming.** 2 credits.

For description and prerequisites of the preceding subjects, see general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

20-b. **Farm Management and Accounting.** Textbook, lectures, and laboratory work relating to the development, organization, and management of the farm. The theory and practice of farm cost-accounting together with the factors underlying the development of specific types

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of farming will be studied. Open for students who have not had Farm Management 8-a or Farm Accounting 7-c. 6 credits: 3 lectures, 3 laboratories.

21-c. Advanced Farm Management. Problems in correlation, tabulation and farm accounting. Intended for those who are interested in research or demonstration work. Accounts on individual farms will be kept and surveys made. 2 credits: 2 laboratories.

22-a. History of Agriculture. Lecture and library work upon the history and development of agriculture from early Egyptian to modern times. Special attention will be given to such factors as soil, climate, crops, machinery, laws, and character of the people, which have affected this development. 2 credits: 1 lecture, 1 laboratory.

ANIMAL HUSBANDRY

JOHN C. McNUTT, *Professor*

To "major" in Animal Husbandry the student must have had credit in general Animal Husbandry as required for undergraduate students specializing in Animal Husbandry.

9-c. Sheep and Swine Husbandry. 4 credits.

10-b. Management of Horses and Beef Cattle. 4 credits.

12-c. Animal Husbandry Seminar. 2 credits.

13-c. Principles of Nutrition. 2 credits.

For description and prerequisites of the preceding subjects, see general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

15-a. Advanced Livestock Judging. A systematic study of animal structure to determine the conformation resulting in greatest efficiency for purpose intended; to show standards and methods of judging; to correlate production tests with conformation. 5 credits.

16-b. Advanced Animal Nutrition. A careful study of the more recent work in animal nutrition which has a direct bearing on the growth, reproduction and efficiency of our domestic animals. 5 credits.

17-c. Advanced Animal Breeding. A careful study of the modern work in genetics as applicable to livestock breeding. 5 credits.

DEPARTMENT OF ARCHITECTURE

ERIC T. HUDDLESTON, *Professor*

CHESTER E. DODGE, *Instructor*

Architectural Construction. The department offers, as a "major," work leading to the degree of Master of Science and Master of Arts

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for those who have completed a standard four-year course in Architectural Construction or Architecture substantially equivalent to that required of undergraduates in this institution.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

101-a, 102-b, 103-c. Architectural History. A special research coördinated with the major subject elected. 3 credits each.

136-a, 137-b, 138-c. Structural Design. The design of special structures involving problems in reinforced concrete and steel frame construction. 9 credits each, requiring a minimum of 23 hours a week.

150-a, 151-b, 152-c. Architectural Design. The "Class A program of design problems of the Beaux Arts Institute of Design" will be followed throughout the year. 9 credits each, requiring a minimum of 23 hours a week.

BOTANY

O. R. BUTLER, *Professor*

MABEL M. BROWN, *Assistant Professor*

L. J. KLOTZ, *Assistant Professor*

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

20-a, 21-b, 22-c. Seminar. 1 credit each.

23-b. Fungicides. Preparation and use of fungicides and a study of their effect upon the higher plants and the organisms parasitic upon them. 3 credits: 1 lecture; 2 laboratories.

23-b and 24-b are given in alternate years.

24-b, 25-c. Advanced Plant Physiology. Mechanics of growth; influence of external conditions on growth; absorption and translocation; the food of plants; constructive and destructive metabolism; respiration and fermentation. 3 credits each: 1 lecture; 2 laboratories.

24-b and 25-c are given in alternate years with 23-b.

26-a. Plant Genetics. Lectures and readings on heredity, including Mendelism, neo-Mendelism, mutation and the chromosome theory with special reference to plants. 3 credits: 3 lectures.

27-b. Soil Bacteriology. A study of soil organisms and their economic importance in relation to soil fertility. 3 credits: 1 lecture; 2 laboratories.

27-b and 28-c are given in alternate years.

28-c. Immunity and Infection. A course of lectures, recitations and readings on susceptibility, resistance and immunity. 3 credits: 3 lectures.

28-c and 27-b are given in alternate years.

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CHEMISTRY

CHARLES JAMES, *Professor*

GEORGE A. PERLEY, *Associate Professor*

Graduate work in Chemistry is open to those who have completed the Chemistry Course of either the College of Liberal Arts or the College of Technology, or some similar course of study. Excellent opportunities are offered for research in General and Analytical Chemistry, and the metallurgy of rare metals.

29-a, 30-b, 31-c. **Physical Chemistry.** 3 credits each.

32-a, 33-b, 34-c. **Advanced Inorganic Chemistry.** 3 credits each.

35-a, 36-b, **Industrial Chemistry.** 3 credits each.

42-a. **Physical Chemistry Laboratory.** 2 credits.

For description and prerequisites for the preceding subjects, see general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

301. **Practical Spectroscopic Analysis.** The subject matter includes a study of absorption, spark, arc and phosphorescent spectra, together with the procedure for the detection of the rarer elements, the preparation of vacuum tubes, and the calibration of a spectroscope. 3 credits: 3 laboratories.

302, 303, 304. **General Chemistry.** This will cover certain selected topics. 3 credits each: 2 recitations; 1 laboratory.

305. **History of Chemistry.** 3 credits: 3 recitations.

306, 307, 308. **Quantitative Analysis.** The complete analysis of complex minerals, and determinations presenting more than ordinary difficulties. 3 credits each: 3 laboratories.

309, 310. **Chemistry of the Rarer Elements.** An introduction to this field of chemistry. 3 credits each: 2 recitations; 1 laboratory.

ECONOMICS

HARRY W. SMITH, *Professor*

No student is expected to do his major work in this department unless his thesis is to be in the field of the history of economics.

14-b. **Money and Banking.** 3 credits.

22-a. **Corporations.** 3 credits.

26-b. **Transportation.** 4 credits.

30-c. **Principles of Public Finance.** 3 credits.

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34-a, 35-b. History of Economics. 3 credits each.

40-a, 41-b, 42-c. Seminar in Current Economic Problems. 2 credits each.

118-a, 119-b, 120-c. Advanced Accounting. 3 credits each.

For prerequisites and description of above subjects, see general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

43-a, 44-b, 45-c. Advanced Seminar in Economic Investigation. May be offered in connection with allied departments. Credit will be authorized by the head of the department.

EDUCATION AND PSYCHOLOGY

JOHN W. TWENTE, *Professor*

HERBERT F. RUDD, *Associate Professor*

JUSTIN O. WELLMAN, *Assistant Professor*

*HOLLIE L. WHITEMORE, *Assistant Professor in Agricultural Education*

*WALTER A. PIERCE, *Instructor in Industrial Education*

The principle aim of graduate work in the Department of Education and Psychology is the development of the ability to do independent work, and the promotion of the spirit of research. Each candidate for a degree is expected to have a wide knowledge of his subject and of related fields of work.

EDUCATION

14-b. Secondary Education. 3 credits.

15-c. Class-room Management and Methods. 3 credits.

16-a-b-c. Supervised Teaching. 2 to 15 credits.

17-b. High School Administration. 3 credits.

20-a. History and Principles of Vocational Education. 3 credits.

35-b. Agriculture in the High School. 3 credits.

36-c. Supervised Teaching in Agriculture. 15 credits.

For description and prerequisites of the preceding subjects, see general catalog of the University.

TRADE AND INDUSTRIAL EDUCATION

40-b. Special Methods in Industrial Education. 3 credits.

41-c. Supervised Teaching in Industrial Education. 11 to 16 credits.

* Representing the State Department of Education in the administration of the Smith-Hughes Act.

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50-a. School Administration. 3 credits.

52-a, 53-b, 54-c. Educational Problems. Credit and hours to be arranged.

For description and prerequisites of the preceding subjects, see general catalog of the University.

PSYCHOLOGY

4-a. Psychology of Learning. 3 credits.

5-b. Genetic Psychology. 3 credits.

6-c. Measurements and Statistics. 3 credits.

8-a. Applied Psychology. 3 credits.

9-b. Psychology of Adolescence. 3 credits.

30-a, 31-b, 32-c. Special Problems in Psychology. Credit hours to be arranged.

For description and prerequisites of the preceding subjects, see general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

101-a, 102-b, 103-c. Seminar. Research in education or psychology. Students who wish to carry on investigations of a documentary, experimental or statistical nature should enroll in this subject.

Special problems may be carried over two or more terms. Credit to be arranged.

ELECTRICAL ENGINEERING

L. W. HITCHCOCK, *Professor*

In order to major in the department, a student must have completed all undergraduate Electrical Engineering subjects required in the undergraduate Electrical Engineering Course.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

31-a. Engineering Problems. The analysis and solution of problems of an advanced nature.

32-b. Illumination. A study of the latest development in incandescent lamps, shades and reflectors, with their applications. 3 credits.

33-c. Storage Batteries. The causes and remedies for battery failure. The practical application of the storage battery both for stationary and automotive purposes. 3 credits.

34-a. Radio Communication. Vacuum tube characteristics and applications. Transmitting and receiving circuits and their phenomena. 3 credits.

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35-b. Plant Economy. A study of a plant already in operation, to determine possible improvements in equipment and methods. 3 credits.

36-c. Design. The design of electrical machinery, plant equipment or plant layout. If desired, this subject may supplement E. E. 35-b. 3 credits.

ENGLISH LANGUAGE AND LITERATURE

ALFRED E. RICHARDS, *Professor*

HAROLD H. SCUDDER, *Associate Professor*

The candidate must have a reading knowledge of two or more modern languages exclusive of English and including, preferably, French and German. An acquaintance with Latin, and with English History, is highly desirable.

86-a, 87-b, 88-c. The English Language. 3 credits each.

22-b, 23-c. The English Novel. 3 credits each.

28-b, 29-c. Shakespeare's Plays. 3 credits each.

For description and prerequisites of the preceding subjects, see general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

101-a. Collateral Reading. This is a seminar in the literary masterpieces of the world. It includes the reading and discussing of selected types of literature, such as the epic, the drama, the novel and the essay, and the writing by each student of a 2000-word term paper upon some topic pertaining to the literature studied during the term. 3 credits.

ENTOMOLOGY

W. C. O'KANE, *Professor*

P. R. LOWRY, *Assistant Professor*

To "major" in Entomology, a student will be required to possess a broad groundwork in Zoölogy.

2-a. Insects of Orchard and Garden. 3 credits.

3-b. Insects of Domestic Animals. 3 credits.

4-c. Household Insects. 3 credits.

13-c. Forest Insects. 3 credits.

For description and prerequisites of the preceding subjects, see general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

14-a, 15-b, 16-c. Graduate Entomology. Prerequisites, Entomology 5-a to 10-c, or the equivalent. Credit to be arranged.

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FORESTRY

K. W. WOODWARD, *Professor*

C. L. STEVENS, *Assistant Professor*

Before commencing graduate work in Forestry, a student will be required to have completed work in Dendrology, Silviculture, Forest Management and Forest Practice similar in content and amount to those now required of undergraduates "majoring" in forestry at this institution.

10-a, 11-b, 12-c. Advanced Forestry. 3 credits each.

For description and prerequisites of the above subjects, see general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

101, 102, 103. Forest Ecology. A study of the local problems of forest distribution. 3 credits each.

104, 105, 106. Advanced Forest Utilization. The detailed study of local wood-using industries. 3 credits each.

HISTORY

DONALD C. BABCOCK, *Associate Professor*

No student is expected to do his major work in this department unless he proposes to write his thesis on some phase of New England history, preferably that of New Hampshire. For this purpose the facilities for research are considerable, including the library of the University, the State Historical Library in Concord, and various town records, landmarks, etc.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

1-a. New England History to the Revolutionary Period. This subject takes up the English background of New England, the origins of the separate New England colonies, and the causes for their development of distinguishing traits. 3 credits.

2-b. New England History from the Opening of the Revolutionary Period to about 1820. This subject is a study of the part played by New England in the struggle for independence, and its contribution to the foundations of the new nation. 3 credits.

4-a, 5-b, 6-c. Seminar in New Hampshire History. Selected topics will be assigned for individual investigation, such as transportation routes, rural decline, the development of the mill town, etc. The relation to a possible rejuvenation of New Hampshire life will be kept in mind throughout these courses. 3 credits each.

GRADUATE BULLETIN

HORTICULTURE

GEORGE F. POTTER, *Professor*

J. RAYMOND HEFLER, *Assistant Professor*

The aim of graduate work for students in Horticulture is to acquaint the candidate with the details of present horticultural practices and the experimental evidence bearing on them. Participation in the weekly discussion group or seminar is required. Methods of investigating horticultural problems will be studied, and work must be elected in biological and fundamental sciences which are related to the subject, as for instance, Botany, Chemistry, Genetics and Economics.

The student must have completed a course of study in Horticulture and related sciences equivalent to that required of students "majoring" in Horticulture at this institution. The student should also have sufficient practical experience to enable him to understand and appreciate the problems of Horticulture.

The library and equipment of the Experiment Station are available for the use of graduate students who will be expected to become familiar with and share in the experimental work of the department.

5-a. Systematic Horticulture. 2 credits.

10-c. Evolution and Improvement of Plants. 3 credits.

12-a, 12.5-b, Seminar. 2 credits each.

14-a, 15-b, 16-c. Advanced Horticulture. Credit to be arranged.

For description and prerequisites of the preceding subjects, see the general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

101. Horticultural Problems. A critical study of the results of original investigations in Pomology and Olericulture. 4 credits: 4 lectures.

102. Methods of Horticultural Research. An examination of the methods used in laboratory and field by horticultural investigators. 2 credits: 2 lectures.

LANGUAGES

HAMILTON FORD ALLEN, *Professor*

JAMES H. MARCEAU, *Associate Professor*

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

French 101-a, 102-b, 103-c. The Classic Drama. Reading of several plays, and study of the technique and sources of the classic drama. 3 credits: 3 recitations each.

Spanish 101-a, 102-b, 103-c. Recent Tendencies in Spanish Literature. Prose and poetry of the end of the nineteenth and beginning of the twentieth centuries. 3 credits: 3 recitations each.

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French and Spanish 104. General Phonetics. A study of the sounds and intonations of French and Spanish. 3 credits: 3 recitations.

French 105. History of the French Language. Historical grammar, and reading of selections. 3 credits: 3 recitations.

Spanish 105. History of the Spanish Language. Historical grammar, and reading of selections. 3 credits: 3 recitations.

MATHEMATICS

H. L. SLOBIN, *Professor*

G. N. BAUER, *Associate Professor*

E. W. BOWLER, *Assistant Professor*

10-a, 11-b, 12-c. Advanced Calculus. Prerequisite: Mathematics 9-c. 3 credits each.

13-a. Teaching of Mathematics in Secondary Schools. Prerequisites: Mathematics 6-c or 203-c, and Education 1-a and 2-b. 3 credits.

14-b, 15-c. Theory of Equations and Determinants. Prerequisite: Mathematics 9-c. 3 credits each.

For description of all of the above subjects, see general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

16-a, 17-b, 18-c. Advanced Analytic Geometry. Coördinate systems; algebraic curves; application of the theory of invariants to higher plane curves of the third and fourth order; differential geometry. Prerequisite: Mathematics 9-c. 3 credits each.

301-a, 302-b, 303-c. Theory of Functions of a Real Variable. A critical study of Infinitesimal Analysis. Prerequisite: Mathematics 12-c. 3 credits each.

304-a. Geodetic Surveying. The work consists of triangulation; observations for time, latitude and longitude; magnetic observations for declination, and dip; map projections. Prerequisites: Mathematics 9-c, 19-a and 20-c. 3 credits.

MECHANICAL ENGINEERING

CALVIN H. CROUCH, *Professor*

EDWARD L. GETCHELL, *Assistant Professor*

The Department of Mechanical Engineering is well equipped as regards personnel and laboratory equipment to offer extensive courses in several lines of Mechanical Engineering.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

401-a, 402-b, 403-c. Advanced work in Mechanics of Engineering, Machine Design, Power Plant Engineering, Heat Power Engineering,

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Industrial Engineering and Materials Testing. The work in these different fields will be modified, as far as practicable, to meet the needs of the individual student. 6 credits each.

PHYSICS

H. L. HOWES, *Professor*

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

41-a. Theory of Electrons. A study of the experimental methods employed in determining the properties of the electron. The work of Sir J. J. Thompson, C. T. R. Wilson, R. W. Millikan and others will be considered. Prerequisites: Physics 11; Mathematics 9. 3 credits: 2 lectures; 1 colloquium.

42-b. Theory of Electrons. A continuation of 41-a to include the theory of gaseous conduction, ratio of charge to mass, ionization by collision, cathode rays, positive rays. Prerequisite: Physics, 41-a. 3 credits: 2 lectures; 1 colloquium.

43-c. Theory of Electrons. A continuation of 42-b to include the theory of thermionic emission, the photo-electric effect, X-rays and a very brief consideration of the modern theory of radiation. Prerequisite: Physics 42-b. 3 credits: 2 lectures; 1 colloquium.

SOCIOLOGY

A. N. FRENCH, *Professor*

30-a, 31-b, 32-c. Seminar. 1 credit each.

For description and prerequisites of the preceding subjects, see general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

33-a, 34-b, 35-c. Social Amelioration. Advanced studies into the nature, causes and treatment of criminal and juvenile delinquents, mental and moral defectives, and social dependents. Statistical methods, case studies, and social surveys are incident to class procedure. 3 credits each: 3 recitations or conferences. Not given in 1924-25.

36-a, 37-b, 38-c. Population Problems. Investigations of problems incident to the trend of population. A study of causes for the regional population increases and decreases of urban and rural New England. 3 credits: 3 recitations or conferences. Not given in 1925-26.

40-a, 41-b, 42-c. Advanced Sociology. Advanced studies in social theory, social philosophy, the technic of applied sociology, and statistical methods. 1 credit each. Extra credit when authorized.

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ZOÖLOGY

C. FLOYD¹ JACKSON, *Professor*

The special requirements for graduate work in Zoölogy include a thorough foundation in zoölogical principles, and the equivalent of a "major" of 27 hours.

In addition to the above the student must have had 9 hours in General Chemistry, and 9 additional hours in any of the following subjects: Organic Chemistry, Physiological Chemistry, Physics, Botany or Psychology.

16-a, 17-b, 18-c. **Evolution and Genetics.** 3 credits each.

36-a, 37-b, 38-c. **Histology.** 3 credits each.

39-a, 40-b, 41-c. **Embryology.** 3 credits each.

For description and prerequisites for the preceding subjects, see the general catalog of the University.

SUBJECTS PRIMARILY FOR GRADUATE STUDENTS

22-a, 23-b, 24-c. **Advanced Ecology.** A study of advanced ecological problems and their correlation with Morphology, Physiology and Taxonomy as exemplified by local associations and cenoses. 3 or 5 credits each.

25-a, 26-b, 27-c. **Advanced Seminar.** 1 credit each.

**CAMPUS
UNIVERSITY OF NEW HAMPSHIRE
DURHAM, N. H.**

1/4 MILE

TO VILLAGE

TO COLLEGE WOODS

SHEEP BARN

POULTRY PLANT

POWER PLANT AND SHOPS

BULL PEN

DAIRY BARN

OLD CREAMERY

MC SMITH HALL

ARMORY & GYMNASIUM

FACTORY CLUB

HOME ECONOMICS PRACTICE HOUSE

CONGREAVE HALL

SMITH HALL

PALLARD HALL

GARRISON AVENUE

THOMPSON AVENUE

MAIN STREET

BALLARD STREET

PRESIDENT R. D. HETZEL

COMMONS BUILDINGS

INGHILD HALL

BADGERS

THOMPSON HALL

DENNERITT HALL

GREEN HOUSE

GARAGE

CONANT HALL

LIBRARY

BROOK

1/8 MILE

ATHLETIC FIELD

PAVILION BUILDINGS

ROCKY BARN

STATION

E. T. HODGKINSON - DEL.

CAMPUS
UNIVERSITY OF NEW HAMPSHIRE
DURHAM, N. H.

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TO COLLEGE WOODS
SHEEP BARN
POULTRY PLANT
1/4 MILE
BROOK
1/8 MILE
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BALLARD STREET
GARRISON AVENUE
ROLLARD HALL
SMITH HALL
CONGREGATE HALL
HOME ECONOMICS PRACTICE HOUSE
FACULTY CLUB
ARMORY & GYMNASIUM
ATHLETIC FIELD
MCCHILD HALL
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